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Understanding Strategic Interactions in Television Commercials: A Developmental Study

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The purpose of this study was to introduce an assessment procedure designed to explain developmental differences in understanding television advertising messages. Goffman's sociological concept of the "strategic interaction" and "recursive thinking," the social analogue of Inhelder and Piaget's analysis of formal operational reasoning, provided the conceptual framework for our experimental paradigm. Four commercials for children's food products containing strategic interactions between two siblings were shown to 84 children, adolescents, and young adults. Participants were assessed for their understanding of the actors' behaviors and thoughts and for their understanding of the intent and persuasive strategy of the advertiser. Results indicated effects for both grade and commercial structure. The implications of these findings for social-cognitive development and for policy affecting children and television advertising are discussed.

This study introduces a cognitive-developmental assessment procedure in order to explain age-related differences in the comprehension of television advertising messages. Understanding of television advertising is a multifaceted problem that involves: (a) differentiating commercials from programs and knowing that ads are produced by a different source, (b) perceiving the intended audience and identifying informative content, and (c) realizing the scripted symbolic nature and persuasive intent of advertising (Huston & Wright, 1982). Comprehension of advertising's persuasive intent is the aspect of this general process that will be addressed in this report.

Research suggests that children younger than 8 years of age possess a special vulnerability to television advertising due to their lack of comprehension of its basic

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purpose (Bever, Smith, Bengen, & Jordan, 1979; Robertson & Rossiter, 1974; Rubin, 1974, Ward, Reale, & Levinson, 1972; Ward & Wackman, 1973). This persuasive agenda poses problems for child viewers, since they tend to process other persons' behaviors at face value, assuming that people tell the truth (Chandler, Paget, & Koch, 1978; Whiteman, 1967, 1970). A substantial research literature inspired by Piaget's theory of cognitive development has demonstrated that until the middle years children have difficulty understanding the perspective or motive of another person when it differs from their own (see Chandler, 1977; Shantz, 1975 for complete reviews). Therefore, it is difficult for young children to comprehend that an unseen agent is creating a commercial message with a purpose other than to entertain or inform them. Understanding the profit motive and other economic concepts is beyond the grasp of even elementary school aged children according to the results of the social-cognitive literature (Berti & Bombi, 1981; Furth, 1980; Leahy, 1981).

Global awareness of the advertising agenda, however, does not guarantee the child or adult viewer immunity to its influence and power to persuade. In the last 5 years, increasing public awareness that children are a special population possessing a unique set of competencies as well as vulnerabilities has led to a variety of training attempts at consumer literacy (Lloyd-Kolkin, Wheeler, & Strand, 1980; Roberts, Christenson, Gibson, Mooser, & Goldberg, 1980; Singer, Zuckerman, & Singer, 1980; Wackman, Wartella, & Ward, 1976). Although these attempts at building critical attitudes toward commercial appeals are well intentioned, such interventions seem premature, since they deal with television advertising in an overly even-handed manner. Only a handful of recent studies (Calvert, Huston, Watkins, & Wright, 1982; Collins, 1981; Greer, Potts, Wright, & Huston, 1982; Ross, Campbell, Huston-Stein, & Wright, 1981) suggest that television advertising varies in formal features and that these formal differences are important determinants of children's responses. The present study initiates a research program of careful analysis of the formal features of television commercials in order to pose questions concerning "the match" (Hunt, 1961) or "the correspondence" (Inhelder, Sinclair, & Bovet, 1974) between the information-processing capabilities of children and the particular persuasive strategies used in commercial appeals. Piaget's cognitive-developmental theory (Piaget, 1970) and Goffman's sociological concept of the strategic interaction (1969) permit the joint characterization of the cognitive-processing capabilities of children and the complexity dimensions of television commercials in order to deal with this problem of "the match."

Goffman's definition of the strategic interaction as "an interpersonal encounter which has as its aim the acquisition, concealment or revelation of information" (Elkind, 1980, p. 336) led Elkind to propose a developmental analysis of such social encounters. He argues that strategic interactions are an apt characterization of adolescent social relations and reflect the emergence of formal operational thinking. Instances of such attempts to conceal, reveal, or acquire information, however, are characteristic of the spontaneous games and social encounters of younger children (Hoffman, 1975). Both Elkind's example of the adolescent who deliberately removes the telephone receiver from its carriage in order to create the image of

popularity and the television commercial in which a 10-year-old takes advantage of his young sibling's naiveté about verbal contracts in order to maneuver him into eating his "healthy" breakfast cereal reflect the "mind games" characteristic of the strategic interaction. How does the recipient of an eternal busy signal or the younger brother teetering on the brink of a bribe committing him to a foul tasting breakfast understand such manipulation? How does a third party observing such a strategic interaction comprehend both its purpose and implications? Cognitive-developmental theory suggests methods for investigating these complex representational interactions, but satisfying answers are still in the offing.

Although children may engage in strategic interactions at an earlier age than a prediction based on Piagetian theory suggests, they may not comprehend such manipulations when they observe such social encounters between others or when they are the targets of the strategic interaction themselves. Inhelder and Piaget's original studies of hypothetical-deductive and inductive reasoning (1958) and Elkind's social analysis of formal operational reasoning (1974) suggest that explicit comprehension of ideas processed on the plane of thought independent of their concrete base is a relatively late arriving cognitive-developmental achievement. The empirical literature concerning the development of such competencies pales by comparison to the theoretical speculations on the topic.

Miller, Kessel, and Flavell (1970) attempted a direct test of social-cognitive understanding by presenting 6- through 11-year-old children with a series of pictures representing persons: (a) thinking about another person's action, (b) thinking about thinking (1-loop recursion), and (c) thinking about thinking about thinking (2-loop recursion). Results indicated that only 40% of their 11-year-old subjects demonstrated competence with respect to 2-loop recursive thinking. Although this study is frequently cited in the social-cognitive literature, children's ability to "think about thinking" does not correlate with their performance on other social-cognitive measures (Landry & Lyons, 1980; Rubin, 1973, 1978). As both Chandler (1977) and Higgins (1981) have commented, the ability to hold another's thinking as the object of one's own thought is derived from inferences and may be more closely aligned to formal operational than to concrete reasoning. Research in the development of person perception (e.g., Barenboim, 1981; Livesley & Bromley, 1973) has provided support for both Chandler's and Higgins' analyses, demonstrating that "two-loop recursive thinking" does not truly blossom until adolescence.

Two major points of criticism emerge with respect to the Miller et al. study. First, the fifth- and sixth-graders' scores reached a plateau suggesting that additional developmental changes in recursive thinking may occur during adolescence. Consequently, study of a wider cross-section of ages, particularly an older population, is suggested. Second, the Miller et al. task is less than optimal since the stimuli used are pictorial and formal representations of the recursive thinking structure, and the response required of the child is a verbalization of the structure itself. A less experimentally contrived paradigm for studying the development of such competencies is required and was our chief concern.

We propose that advertising strategies are quintessential examples of recursive thinking in its true ecological form. Marketing success is predicated on both

predicting and influencing the behavior of the consumer, a task that entails an advertiser's consideration of consumer reactions and thoughts. The persuasive agenda of advertising and methods employed in order to attain this goal reflect the strategic interaction conceptualization, since deliberate manipulation of the amounts and kinds of information contained in commercial messages is at the heart of marketing techniques. The wedding of inquiry into recursive thinking development and the strategic interaction analysis provides a conceptual framework with much generative potential for research. It permits characterization of social interchange occurring both within commercial messages and of commercial messages themselves. Moreover, it allows for examination of developmental differences in recursive thinking abilities with respect to these two levels of social interchange. Of the many research questions potentially addressed, several specific developmental hypotheses were posed regarding recursive thinking and strategic interactions.

The following set of experimental hypotheses derive from Piagetian theory and research and reflect structural-developmental assumptions. Age was used as a rough estimate of cognitive-developmental maturity: kindergarteners assumed to be in the preoperational stage; third graders in the concrete operational stage; sixth graders in transition to formal operations; and college students fully formal operational. Kindergarten children were expected to think about the overt behavior in the television commercials but to neither think about the thinking of the actors nor grasp the persuasive intention of the commercial itself. Third graders were expected to consider the thinking underlying the overt behavior in the commercial (1-loop recursive thinking) but not to demonstrate competence in thinking about one character's thinking about another character's thinking (2-loop recursive thinking). Both third and sixth graders were expected to grasp the persuasive intention of the commercial message itself, but only the sixth graders were anticipated to have some understanding of the psychological strategies used in order to accomplish this goal. Sixth graders were expected to show 2-loop recursive thinking competence with respect to both the social interchange within the commercial structure and commercials as a form of persuasive communication. Awareness that the advertiser is thinking about the viewer's thinking when planning the commercial message was expected to be more fully developed among the college students than the sixth graders.

METHOD

Subjects

The subjects of this study were 84 children, adolescents, and young adults, divided equally between the sexes. The youngest subjects sampled were kindergarten children from a university laboratory school and ranged in age from 4.6 to 5.8 (M = 5.3). The elementary school aged children sampled were all from a public school in suburban Boston and were from the third grade (age range 8.3 to 10.0, M = 9.0) and the sixth grade (age range 11.3 to 12.2, M = 11.8). All the preschool and school-aged children were, according to teacher report, of average or above average

intelligence. The fourth group of subjects consisted of young adults of undergraduate status at a private university in the suburban Boston area (age range 18.2 to 21.5, $M = 19.6$).

Procedures

Participants were told that we were interested in their responses to four television commercials and that they could view the commercials as often as they wished before responding to a series of questions. Most of the youngest group and several of the third graders made such a request, which was promptly honored.

Each subject was tested individually and shown four commercials counterbalanced for order within each age group. After viewing each commercial, the subject was asked to (a) tell what happened in the commercial and (b) respond to a series of six questions. Four of these questions required subjects to think about the behavior depicted and the thinking behind the behavior. The last two questions of the seven question interview similarly required subjects to think about behavior and think about thinking (see Table 1 for verbatim questions). The target of these last two inquiries, however, was the advertiser. Understanding the intent of the advertiser and the rationale behind the use of the particular commercial was ascertained in the last two questions. All responses were recorded verbatim by the principal

TABLE 1
Sample Protocol Commercial #1

1. PLEASE TELL ME WHAT HAPPENED IN THE COMMERCIAL.
   A. The older brother made a deal with his little brother and he thought that the little brother wouldn't like the cereal. But since the little brother wanted the mitt, he had to eat the cereal. The little brother ate the cereal and liked it. The older brother wanted the cereal back but a deal's a deal. The little brother got the mitt.
2. WHY DID THE BIG BOY (USE CHILD'S OWN WORDS FROM Q1; e.g., "make a deal with his little brother?")
   A. To make the little brother eat the cereal.
3. WHAT WAS THE BIG BOY THINKING WHEN HE (USE CHILD'S OWN WORDS FROM Q2; e.g., "made a deal to make his little brother eat the cereal.")
   A. That the little brother wouldn't like the cereal so he'd get to keep the mitt and not give it away.
4. WHY DID THE LITTLE BOY (USE THE CHILD'S OWN WORDS FROM Q1; e.g., "eat the cereal?")
   A. To get the mitt.
5. WHAT WAS THE LITTLE BOY THINKING WHEN HE (USE CHILD'S OWN WORDS FROM Q4; e.g., "ate the cereal to get the mitt?")
6. WHY DID THEY PUT THIS COMMERCIAL ON T.V.?
   A. To make people buy Life cereal.
7. WHY DID THEY USE THIS SCENE BETWEEN THE TWO BOYS TO (USE CHILD'S OWN WORDS FROM Q6; e.g., "to make people buy Life cereal.")
   A. The two boys are making a deal to make the little brother eat the cereal. Because the little brother liked it after a while, we might like it.

investigator and two assistants, and later scored by two child development students blind with respect to the hypotheses, sex, and grade of the subjects.

Stimulus Materials

Four commercials ranging in viewing time from 22–30 s (M = 28 s) were shown. Each commercial was selected for inclusion on the basis of its adherence to four criteria: (a) the actors and actresses were children, not animated figures; (b) a sibling relationship was represented by two characters; (c) the appeal strategy employed by the advertiser was an "attempted strategic interaction" on the part of the older sibling which backfired (in each incident, the younger sibling outwits the older sibling); (d) the product advertised was breakfast or snack food, and the setting was the home with familiar props.

Scoring Procedures

The first question, which requested that subjects tell what happened in each commercial, was scored for comprehension and memory, including the number of words, verbs, and percentage of events recalled. Subjects were then asked to explain why each character was behaving as s/he was in the advertisement and to comment upon the thinking behind these behaviors. In each inquiry, the child's own words from question one were used for the subsequent questions (see Table 1 for a sample protocol). Questions 2 through 5 were scored according to a 6-point scale that was conceptually subdivided into three categories: 0 and 1 scores indicated responses that referred to observable interpersonal behavior or product features; scores of 2 and 3 indicated thinking about thinking about behavior (a score of 2 was given for reference to the thoughts or desires of a single character and 3 was assigned for reference to opposition of interest of two characters); scores of 4 and 5 indicated thinking about thinking about thinking (a score of 4 referred to 2-loop recursive thinking with the self, as well as the other, as a possible object of thought, and a score of 5 indicated awareness of the strategic interaction's effect on a social group). Table 2 provides examples of these scoring categories.

The last two questions were scored for comprehension of the persuasive intent and strategies of the advertiser. Question 6 was designed to index whether the basic purpose of commercials was understood. This was scored according to a 3-point scale: 0 = don't know; 1 = commercial's purpose is assistive (i.e., intent is helpful or to provide information); 2 = commercial's purpose is persuasive. Question 7, which required subjects to consider the persuasive strategy employed in the commercial, was scored according to a 6-point scale that was essentially the same as the scoring for Questions 2 through 5. Table 3 provides examples of these scoring categories.

Interrater Reliability

In order to establish interrater reliability, complete protocols for 10 participants distributed across grade were selected and scored independently by two raters blind with respect to grade and sex of subject. Responses to questions two to seven for

TABLE 2
Scoring Levels and Examples of Responses to Questions 2–5

Scoring Levels	*Why Did Each Sibling Behave in a Particular Way?*	*What Was Each Sibling Thinking When S/He Behaved in That Particular Way?*
Nonrecursive (Subject thinking about behavior)		
0 = tautologies Don't know	because that's what people do in commercials	she didn't think up anything
1 = descriptions or evaluations of observable interpersonal behavior or product features	maybe the toast was yummy	because it was round
1-loop recursive (Subject thinking about thinking about behavior)		
2 = reference to thoughts, wants, or desires of a single character	because she wanted the waffle	he was thinking it was lunch time
3 = reference to opposition of interest of 2 characters; conflict	because they both wanted it	she was thinking that it would work
2-loop recursive (Subject thinking about thinking about thinking)		
4 = reference to thinking about thinking about thinking with other or self as object	he is obviously smarter than his sister expected and knew what he was doing, using his knowledge against her knowledge, he wins	he was thinking that she would be frightened so he would get the waffle back
5 = reference to awareness of the strategic interaction's effect on the audience	the girl is offering the boy a trade but knows he won't take it, thus demonstrating how much he likes it	how can I trick her to get the waffle

TABLE 3
Scoring Levels and Examples of Responses to Question 7

Scoring Level	*Q 7: Why Did They Use This Particular Scene Between the Two Siblings in Order to Sell the Product?*
(Subject thinking about action)	*Nonrecursive*
0 = Don't know, tautologies	Cause they have it So people could watch it
1 = reference to features of ad without implication of how it impacts the selling agenda	the girls like to do it they're good people, good things, good boys and good girls
1-loop recursive (Subject thinking about thinking of advertiser with respect to behavior of viewer)	
2 = reference to desires or motivation of character portrayed	because the girl really wanted the boy to trade so she could have the waffle. because the little brother wanted to buy peanut butter
3 = reference to advertiser's motivation	they want kids to eat it and mothers to buy it so they get more money get kids to like it. The little girls kept on saying she liked it so much—everybody would think she would read her all these things, try so hard to get it.
2-loop recursive (Subject thinking about thinking of advertiser with respect to the viewer psychologically)	
4 = reference to advertising appeal built on identification or modeling effect	to make the kids want to eat it; if they eat it on T.V., maybe they'll eat it at home cause sisters usually fight a lot, and they thought that if they put the commercial on people would buy waffles, cause everybody likes them
5 = reference to advertising appeals to social stereotypes and mastery themes	according to all stereotypes, little boys love baseball and collect baseball cards and to have a product that competed with younger brother's typical pastimes would be a way of selling the product children identify with scene, gets kids involved with commercial—kids see if they can spell words, compare themselves with girls. If they can spell as well as girls they deserve waffles.

each of the four commercials were scored, yielding a total of 40 ratings on each question. For four of the six questions, there was perfect agreement on these 40 ratings. For Question 5, five disagreements out of 40 possible ratings were found, but the difference in scores was never more than 1 scale point and always within conceptual category. Intraclass correlations were calculated for Question 5, with the resulting correlations still extremely high (rcc = .985) (Guilford & Fruchter, 1973).

RESULTS

The results fall into three categories: developmental differences in (a) event memory and comprehension, (b) recursive thinking, and (c) understanding the advertiser's persuasive intent. The relationships between event memory and recursive thinking and between recursive thinking and understanding persuasive intent were of experimental interest as well.

Event Memory and Verbal Fluency

The subjects' own words in response to the first question, "Tell me what happened in the commercial," not only provided the specific phrasing for the four questions that followed, but were scored for event memory and verbal fluency. This procedure was necessary in order to determine whether the effect for grade on recursive thinking and comprehension of persuasive intent was attributable to other factors. Protocols were scored for number of words, number of verbs, and percentage of events recalled; each of these indices was submitted to analyses of variance for grade effects. Each of the four commercials was analyzed separately, since the commercials varied both in length and numbers of events. For all three indices, there was a highly significant overall effect for grade, but a series of Neumann-Keuls tests (Hinkle, Wiersma, & Jurs, 1979) indicated that this grade effect was primarily due to the increase in event memory between the kindergarten and third-grade groups (see Fig. 1). Examination of the protocols indicates that even young children can recall a connected sequence of events and were quite competent in their recall of the "anchor events." The verb-to-event ratio is similar across grades, despite an increase in the total number of words, especially between grades K and 3. Averaged across the commercials, there are 1.84 verbs per event for grades K and 3, 1.89 for grade 6, and 2.28 for college students.

Recursive Thinking

Responses to Questions 2 through 5 were submitted to a 3 factor analysis of variance, with grade (4 levels) and sex (2 levels) as the between-groups factors and commercial (4 levels) as the within-groups factor. Since no main effect for sex was found, nor did sex interact significantly with either of the other two factors, it was dropped from the subsequent analyses, and the male and female data were pooled. In order to meet the assumptions of normality underlying the analysis of variance tests, scores were submitted to logarithmic transformations. The resulting two factor design obtained a strong overall main effect for grade F (3,80) = 97.93, $p < .001$;and a significant main effect for commercial F (3,240) = 4.06, $p < .01$.

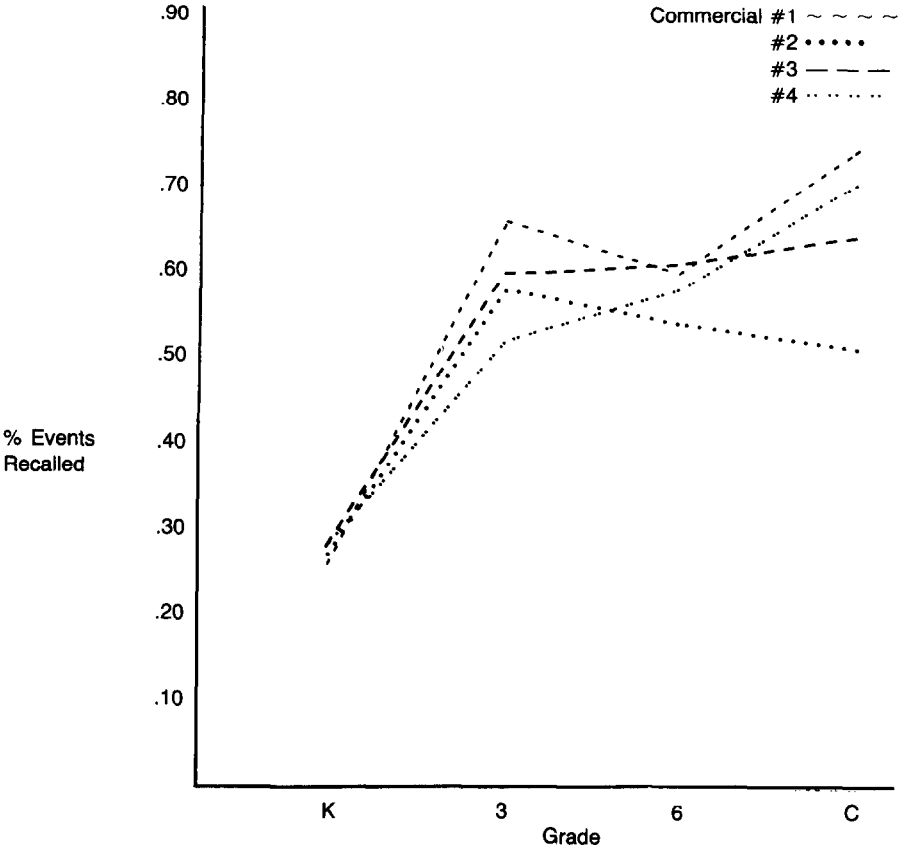

Figure 1. Percentage of events recalled by grade for each commercial: Question 1.

The unanticipated effect for commercial was due to a systematic difference between the fourth commercial and the other three, and consequently all subsequent analyses treated commercial 4 separately from the other three commercials.

The untransformed mean scores for questions addressing recursive thinking by grade for commercials 1, 2, and 3 are presented in Table 4. Scores progressively increased with grade, but the major developmental changes occurred between kindergarten and third grade and between sixth grade and college students. Sixth graders' scores were higher, but not significantly higher than third graders' scores. Inspection of the means indicates that scores roughly correspond to the expected progression: kindergarten children thinking about behavior of the actors (scores of 0 or 1), elementary school aged children thinking about thinking of the actors (scores of 2 or 3), and college students thinking about thinking about thinking (scores of 4 or 5). These scores exhibit relatively good conformity to a model that predicts developmental advance from nonrecursive to 1-loop, to 2-loop recursive thinking.

TABLE 4
Mean Scores for Recursive Thinking, Commercials 1–3 as a Function of Grade and Question (Range 0–5)

Grade		*Thinking About Behavior*			*Thinking About Thinking*		
		(Q 2)	*(Q 4)*	*M*	*(Q 3)*	*(Q 5)*	*M*
K	(N = 17)	1.45	1.18	1.32	1.41	1.22	1.32
3	(N = 24)	2.46	2.61	2.54	2.93	2.78	2.85
6	(N = 23)	2.64	2.94	2.79	3.25	3.00	3.13
C	(N = 20)	3.48	3.70	3.59	3.87	3.85	3.86

A closer look at response variation with respect to specific questions revealed some interesting differences. Questions 2 and 4 required subjects to explain why each of the two target characters exhibited a specific behavior, but Questions 3 and 5 carried the additional requirement that subjects explain the thinking behind the behavior. Questions 3 and 5 might be expected to elicit higher levels of competence for recursive thinking than Questions 2 and 4 due to their demand characteristics. A series of t tests, conducted in order to test this expectation, indicated that for third graders, sixth graders, and college students, scores for Questions 3 and 5 were of greater magnitude than for Questions 2 and 4 ($p < .01$).

The pattern of results for responses to commercial 4 reflect both similarities to the responses in the other three commercials and some important differences. The grade effect was similar to that of the other three commercials, but the question effect was strikingly different. For the fourth commercial, the pattern of scores obtained from Questions 2 and 3 was similar to that obtained for commercials 1, 2, and 3 for kindergarten, third, and sixth graders but higher for college students. The pattern of data obtained for Questions 4 and 5, however, is depressed for third and sixth graders and college students, when compared to the pattern of data obtained for commercials 1, 2, and 3.

The data concerning event memory and verbal fluency indicates a marked increase in event memory between kindergarten and third grade, an unsystematic pattern between third and sixth grade, and sixth grade and college. Recursive thinking scores, in contrast, show an incremental pattern of increase with each grade level. Event memory, therefore, does not explain developmental changes after third grade in our sample.

Persuasive Intent of Advertiser

Responses to Question 6, "Why did they put this commercial on television?" were scored for understanding of persuasive intent. Although originally a 3-point scale was used, 0 and 1 scores were combined for the purposes of statistical analysis due to the low frequency of 0 scores. Only the youngest group of subjects judged the purpose of commercials as assistive. By third grade, the majority of children were

aware that the intent behind television advertising was persuasive. Chi-square analyses for each commercial demonstrated a clear grade effect for this dependent measure between kindergarten and third-grade groups alone ($p < .01$).

Question 7, "Why did they use this specific scene between the two siblings in order to sell the product?" (delivered in the subject's own words) was scored for understanding of the persuasive strategy of the advertiser. A 6-point scale, conceptually subdivided into three levels that refer to thinking about behavior, thinking about thinking, and thinking about thinking about thinking, was comparable to the scoring of Questions 2 through 5.

A clear pattern of results emerged from analyses of Question 7. Overall grade differences were highly significant for each commercial (Kruskal-Wallis one-way analyses of variance, Siegel, 1956). Since 12 contrasts were necessary, a stringent overall significance level of $p < .001$ was set, and comparisons that fell short of this level were treated as random.

Kindergarteners did significantly less well than the three other groups; sixth graders did less well than college students, and third and sixth graders were not significantly different, although the trend was in the expected direction (Mann Whitney-U and Kolmogorov-Smirnov tests for specific contrasts, Siegel, 1956).

Inspection of the means presented in Table 5 indicates what these grade differences actually signify. For all commercials, kindergarteners' scores reflected thought about action; third and sixth graders' responses indicated consideration of the advertiser's thinking with respect to behavior, and college students typically gave responses that reflected consideration of the advertiser's thinking about the viewer psychologically.

A structural isomorphism between the tasks of understanding the strategic interaction between the two siblings within the commercial and understanding the strategic interaction employed by the advertiser in use of particular persuasive techniques was of interest as well. We anticipated that formal operational reasoning skills, when first in evidence, would be more readily applied to the concrete strategic interaction depicted within the commercial appeal than to the strategy used by the less evident advertiser. Table 5 indicates the comparison of recursive thinking

TABLE 5
Recursive Thinking Scores Compared to Understanding Persuasive Strategies as a Function of Grade

Grade	*(Q 3 & 5)*	*(Q 7)*
K	1.32	.45 (.59)
3	2.85 (2.54)	2.47 (2.54)
6	3.13 (3.44)	3.26 (3.13)
C	3.86 (4.65)	4.85 (4.95)

Note: Numbers in parentheses indicate Commercial 4 scores.

scores (Questions 3 and 5) and understanding of persuasive strategies as indexed by Question 7. While there is a trend in the data for scores on Questions 3 and 5 to be consistently lower than scores on Question 7, the difference between these two scores only achieves statistical significance (Kolmogorov-Smirnov test for small samples $p < .05$) in the college sample. For these young adults, the data indicate that although the modal response for recursive thinking is level 4, responses to Question 7 are primarily at level 5. Two-loop recursive thinking competence applied to advertisers' persuasive strategies was clearly more complete than it was for the strategic interactions depicted within the commercials.

DISCUSSION

Interpretations of the empirical findings suggest three areas for discussion: the development of recursive thinking abilities, the comprehension of televised narrative, and policy implications. Television commercials specifically characterized by strategic interactions provided the experimental stimuli, and the strategic interaction was proposed as the essential relationship between the advertiser and the viewer. The complexity of the commercials was considered in terms of both the dramatized events and the structure of the actual social relationship between sender and receiver of the message. In the first instance, the viewing child must think about the trickster, who, anticipating the predictable reasoning of the dupe, generates an alternative assumed not contemplated by the victim. In the case of the advertiser-viewer relation, the advertiser occupies the trickster role.

This research paradigm enabled us to look at developmental differences in recursive thinking abilities with respect to two levels of social interchange. Children were increasingly aware of the complex nature of these social interactions as a function of grade. Results indicated major increments between kindergarten and third grade for 1-loop recursive thinking. Moreover, 1-loop recursive thinking competence for third and sixth graders was a function of the demand characteristics of the question. Future research should aim at unearthing such competencies and not be content with their spontaneous expression. Two-loop recursive thinking was characteristic of a small proportion of our sixth-grade subjects but was typical of the college sample. The results of this study indicate that the development of 2-loop recursive thinking is a decidedly protracted affair that continues well into adolescence, corroborating the results of Miller et al. (1970), and the theoretical arguments of Elkind (1980), Chandler (1977), and Higgins (1981).

Studies of person perception that employ free-response descriptions of other persons (Barenboim, 1981; Bigner, 1974; Livesley & Bromley, 1973; Scarlett Press & Crockett, 1971) also indicate that reference to a person's thoughts about another person's thoughts is a relatively sophisticated sociocognitive achievement. The present study contributes to our understanding of this development, since person perception research considers relationships frozen in time, and studies of recursive thought frequently lack ecological validity. A television commercial presents a relationship in process and is a *real* event, albeit a representational one.

Responses of college students were more sophisticated with respect to the

advertising strategies than concerning the strategic interactions occurring within the commercial. The salience and interest value of marketing artifice, in contrast to the dissemblances of children, are offered as one explanation for the discrepancy. Comparison to commercials containing strategic interactions between adults would rule out this explanatory account.

Considered as a study of the comprehension of televised narrative, new questions arise. None of the commercials employed complex film techniques, which have been demonstrated to complicate narrative comprehension (Calvert, Huston, Watkins, & Wright, 1982). Nonetheless, the medium of communication cannot be ignored. At very least, the multi-channel information (i.e., auditory dialogue and visual action) must be considered as different from purely linguistic narrative or description. The possibility exists that the child cannot integrate the multi-channel information, and failures to answer inquiries correctly may not be due solely to differences in recursive thinking ability but to memory abilities as well. Differences among ads for memory and recursive thinking scores suggest that script memory (McCartney & Nelson, 1981) may contribute to inference construction, as well as providing a framework for event memory (Paris & Upton, 1976). Furthermore, differing developmental patterns of scores for event memory and recursive thought indicate that comprehension of these commercials is a product of both cognitive development and recall of event sequences. Research that directly addresses the joint contribution of both levels of cognitive maturity and age to recursive thinking and understanding of manipulative intent would provide important information concerning this complex developmental process.

Finally, policy implications of the present study may be noted. Although our televised stimuli were selected according to strict criteria, results indicated that the fourth commercial was less confusing with respect to its manipulative intent than the other three ads. In commercial 4, the older sister directly addresses the viewing audience, in contrast to dramatic interaction between the two siblings which characterizes the format of the other commercials. This narrative presentation of product information appears to ease the difficulty in attribution of persuasive intent. Differences in presentation format are important dimensions when considering the difficulty children have with applying critical attitudes to television advertising (Calvert et al. 1982; Collins, 1981; Ross et al., 1981; Wartella & Hunter, 1983; Wright & Huston, 1981).

A major concern of citizen groups and federal agencies in the last decade has been that industry establish codes that regulate television advertising aimed at a child audience. According to the National Association of Broadcaster's code (Federal Communication Commission, 1974), host selling and celebrity endorsements were prohibited and disclaimers, and separators, which indicate a shift from program to commercial, were required. Our results imply that the effectiveness of these required separators may be severely limited by similarity in the dramatic structure that exists between programs and some commercials. Research is currently underway in the senior author's lab which aims to both provide a more elaborated

typology of variations in format and chart the impact of such differences on children's comprehension of manipulative intent.

Societal implications on a more general level are of note as well. Although our results indicate that school aged children do not understand the persuasive strategies used in televised advertisements of children's products, they are clearly cognizant of the manipulative intent of such messages. This comprehension of manipulative intent may very well be a by-product of cognitive development in general or may involve a precocity achieved at the expense of adaptive functioning in other areas. It is possible that long-term exposure to socially endorsed manipulative intent may breed a cynicism with respect to social institutions in general. American, Japanese, and Canadian children are exposed to vast amounts of televised advertisements that children growing up in other cultures do not experience (Murray & Kippax, 1981). Cross-cultural comparisons are currently underway with a sample of children in Iceland (Paget & Ingolfsdottir, 1983) where the recent advent of modern technology has differentially affected portions of the population (Edelstein, Keller, & Wahlen, 1981). Comparative study promises to facilitate evaluation of the possibly idiosyncratic contribution of television advertising to children's sociocognitive development.

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